

REMARKS/ARGUMENTS

The Abstract has been amended not to exceed 150 words in length. Claims 1 and 4 have been amended for clarity. Claims 5-6 have been amended to remove the multiple dependency. Claims 2-3 and 7-11 have been cancelled. New claims 12-20 have been added. Support for the new claims is found at specification at page 7, page 12, pages 19-20, page 22 and pages 37-39. No new matter has been added. Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks.

The present invention as set forth in amended Claim 1 relates to a honeycomb carrier for an exhaust gas-cleaning catalyst, wherein the material of the honeycomb carrier is a sintered product containing a Mg, Al, Ti containing compound with an empirical formula  $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$  with addition of alkali feldspar represented by  $(Na_yK_{1-y})AlSi_3O_8$  (wherein  $0 \leq y \leq 1$ ) and the catalyst comprises an alkali metal or alkaline earth metal component to remove NOx in an exhaust gas.

A long term stability at high temperature is an essential property of a honeycomb carrier of the present invention in addition to other properties as described at specification (page 4 lines 8-25, emphasis added).

The present invention provides a honeycomb carrier which is a carrier to support a catalyst to clean particularly an exhaust gas of an automobile containing NOx, which is excellent in heat resistance, thermal shock resistance, mechanical strength and thermal decomposition resistance and has corrosion resistance against a catalyst containing an alkali component, and which is thereby excellent in durability so that it will not deteriorate even in a long term use, and a process for its production.

The improvement of a honeycomb carrier of aluminum magnesium titanate by adding alkali feldspar is demonstrated in the examples of Table 1-2 at specification (page 39). Specifically, Applicants were able to compare a honeycomb carrier of aluminum magnesium titanate with alkali feldspar and a honeycomb carrier without alkali feldspar to evaluate their long term stabilization properties at high temperature. The honeycomb carrier with alkali feldspar, surprisingly has a better corrosion resistance to potassium over the honeycomb carrier without alkali feldspar even after the 200 hrs test. Note that new dependent claims 17-20 have been added to reflect the corrosion resistance to potassium.

Giordano et al (Journal of the European Ceramic Society 2002, 22:1811-1822) disclose aluminium magnesium titanate and also point out the issue of long-time stabilization of aluminium titanate at high temperature. However, there is absolutely no single hint how aluminium magnesium titanate would perform under a corrosive environment at a high temperature in a long term as tested in the present invention. Moreover, there is no suggestion that any effect induced by adding alkali feldspar on aluminium titanate would have the same effect on aluminium magnesium titanate.

Fukuda et al (JP 2002-145659) disclose an aluminum titanate with addition of alkali feldspar but make no mention of a honeycomb carrier made of such aluminum titanates. Fukuda also fails to suggest that such aluminum titanates as claimed in their invention, would possess the properties of an honeycomb carrier of the present invention especially in carrying a catalyst comprising an alkali metal or alkaline earth metal component to remove NOx in an exhaust gas. Additionally, Fukuda reveals nothing about aluminum magnesium titanate and does not disclose a process to make a honeycomb carrier of the present invention. Decisively, Fukuda does not contemplate or suggest the effect of addition of alkali feldspar to aluminum titanates/aluminum magnesium titanates on the long term stabilization property at high temperature. Therefore, there would have been no predictable results available to one of

ordinary skill in the art at the time of invention to show the improved properties the honeycomb carrier of aluminum magnesium titanate with alkali feldspar especially on the long term stabilization at high temperature.

Regarding the reference by Noda et al (US2001/0056034), the Examiner pointed out that “Noda fails to specifically teach that the component of the honeycomb carriers is a sintered product containing Mg, Al, Ti containing compound with an empirical formula  $Mg_xAl_{2(1-x)}Ti_{(1+x)}O_5$  with addition of alkali feldspar represented by  $(Na_yK_{1-y})AlSi_3O_8$  (wherein  $0 \leq y \leq 1$ )”. Further, as to Ono et al and Giordano there is simply no hint of adding the alkali feldspar to a Mg, Al, Ti containing compound. Moreover, none of the references cited contemplate or suggest that adding alkali feldspar to aluminum magnesium titanate could improve the long term stabilization of a honeycomb carrier of aluminum magnesium titanate.

The Office appears to have combined the teachings of the references cited above in order to render the present invention obvious. In order to combine references to provide a basis for rejecting a claim as obvious, those of ordinary skill in the art must have a reasonable expectation that the asserted combination will function successfully. However, each and combined teachings of these references do not disclose, point out or suggest a process to make a honeycomb carrier of aluminum magnesium titanate with alkali feldspar and the resultant properties of the honeycomb carrier in carrying a catalyst comprising an alkali metal or alkaline earth metal component to remove NO<sub>x</sub> in an exhaust gas. Particularly, there would have been **no** predictable results available to one of ordinary skill in the art at the time of invention to envision the improved properties the honeycomb carrier of aluminum with alkali feldspar on the long term stabilization at high temperature as shown in the present invention. Applicants therefore submit that it would **not** have been obvious to one of ordinary skill at the time of invention, with a reasonable chance of success, to adopt the alkali feldspar to improve

the honeycomb carrier made of aluminum magnesium titanate. In this regard, the rejection over the combination of these references should be reconsidered and withdrawn.

Accordingly, as the present invention is neither anticipated nor obvious the withdrawal of the outstanding rejections is respectfully requested, as is the passage of this case to Issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.  
Norman F. Oblon

  
\_\_\_\_\_  
Soonwuk Cheong  
Registration No. 62,793

Customer Number  
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)